Understanding Older Driver Crash Risk by Using Data from Government and Private Sources

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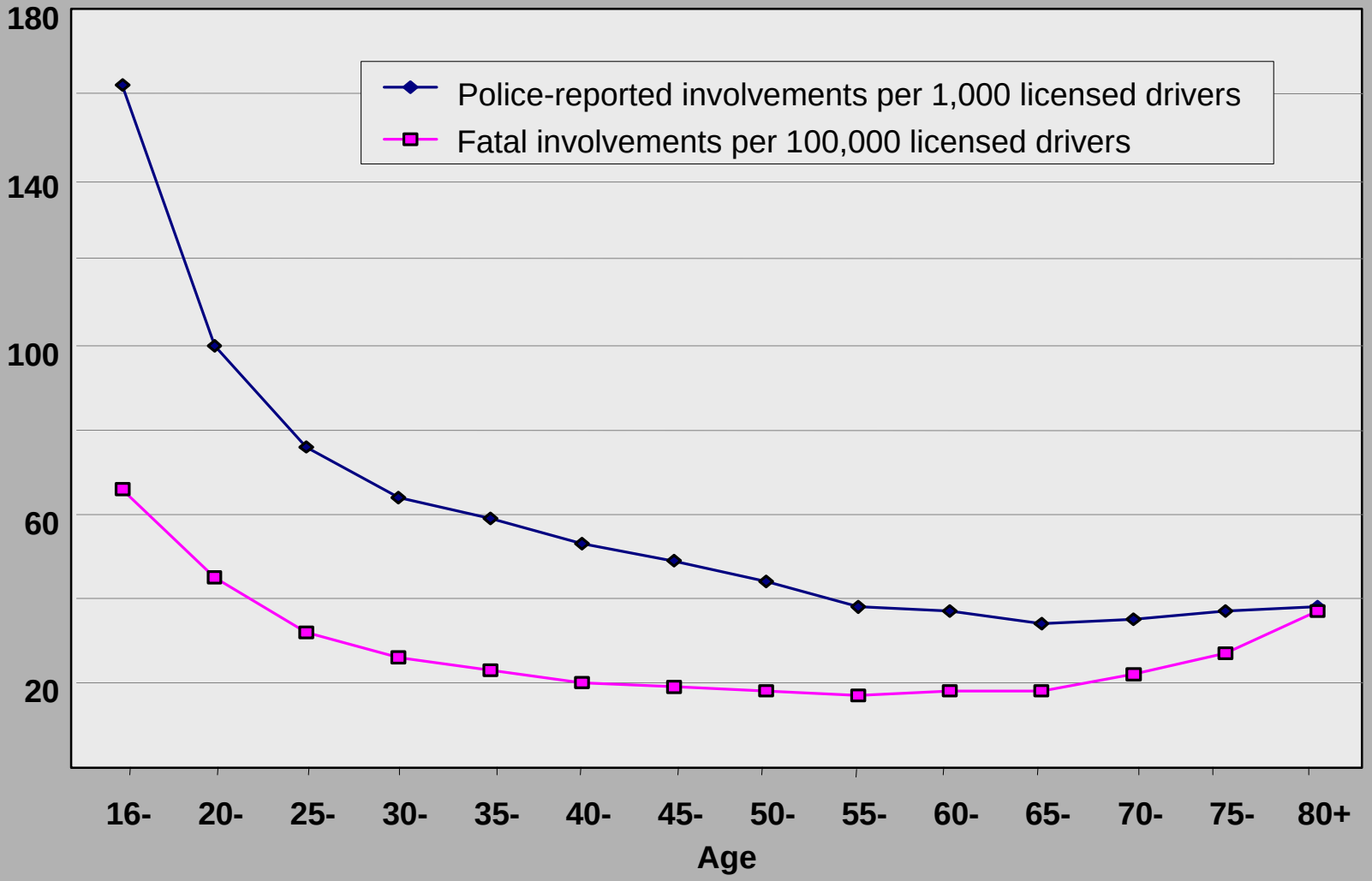
Data sources

- **Deaths**: Fatality Analysis Reporting System (FARS)
- **Crashes**: National Automotive Sampling System (NASS)/General Estimates System, insurance claim data
- **Population data**: FHWA licensed drivers, Nationwide Personal Transportation Survey (NPTS) drivers, insured vehicle-years
- **Exposure data**: NPTS estimates of vehicle -miles

Question: Do older drivers have elevated rates of crash involvement?

Involvement rates in police-reported and fatal crashes by age

Per licensed driver



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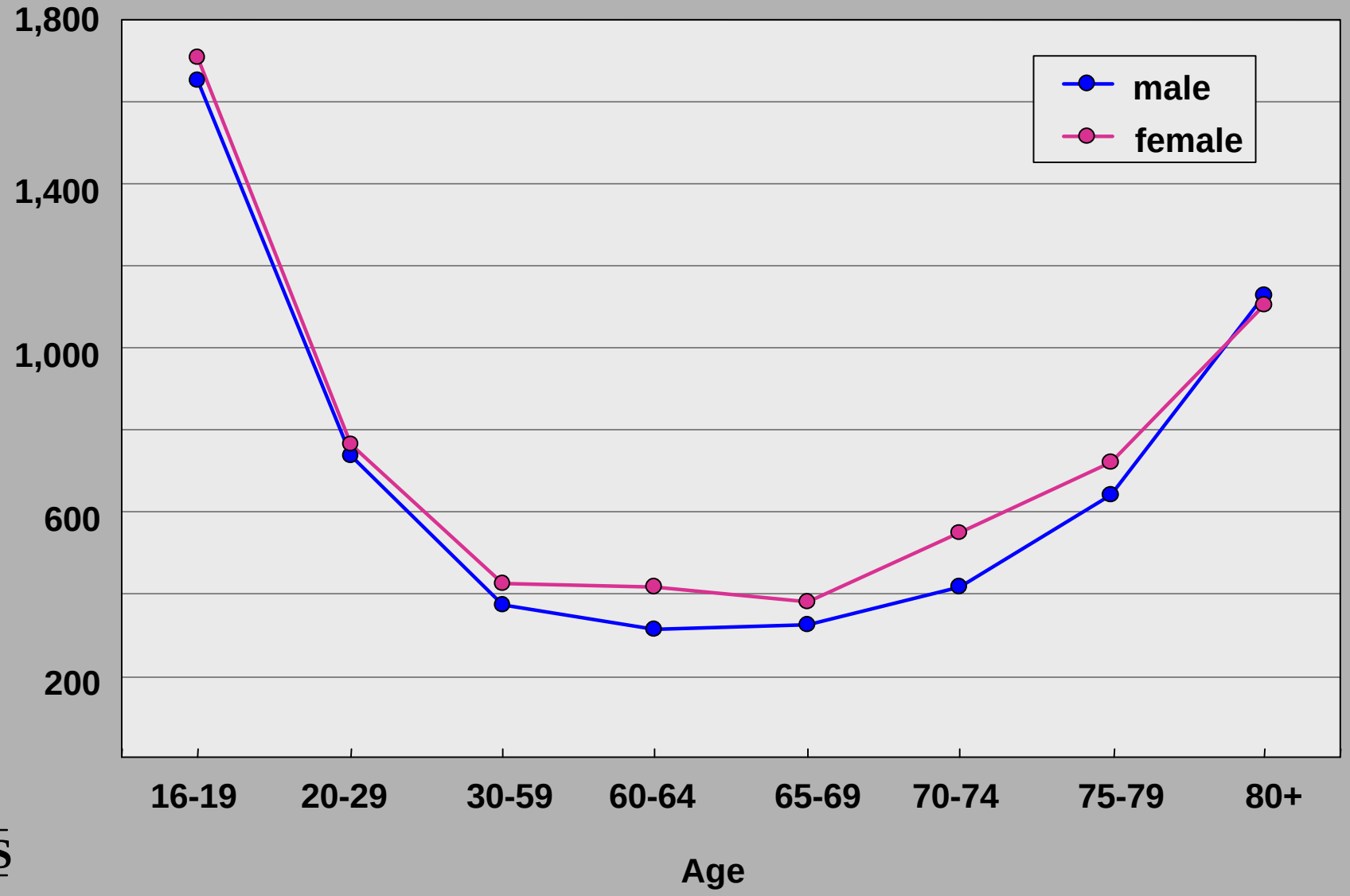
Driver crash rates by age and gender, 1993-97

Per 100 million vehicle-miles



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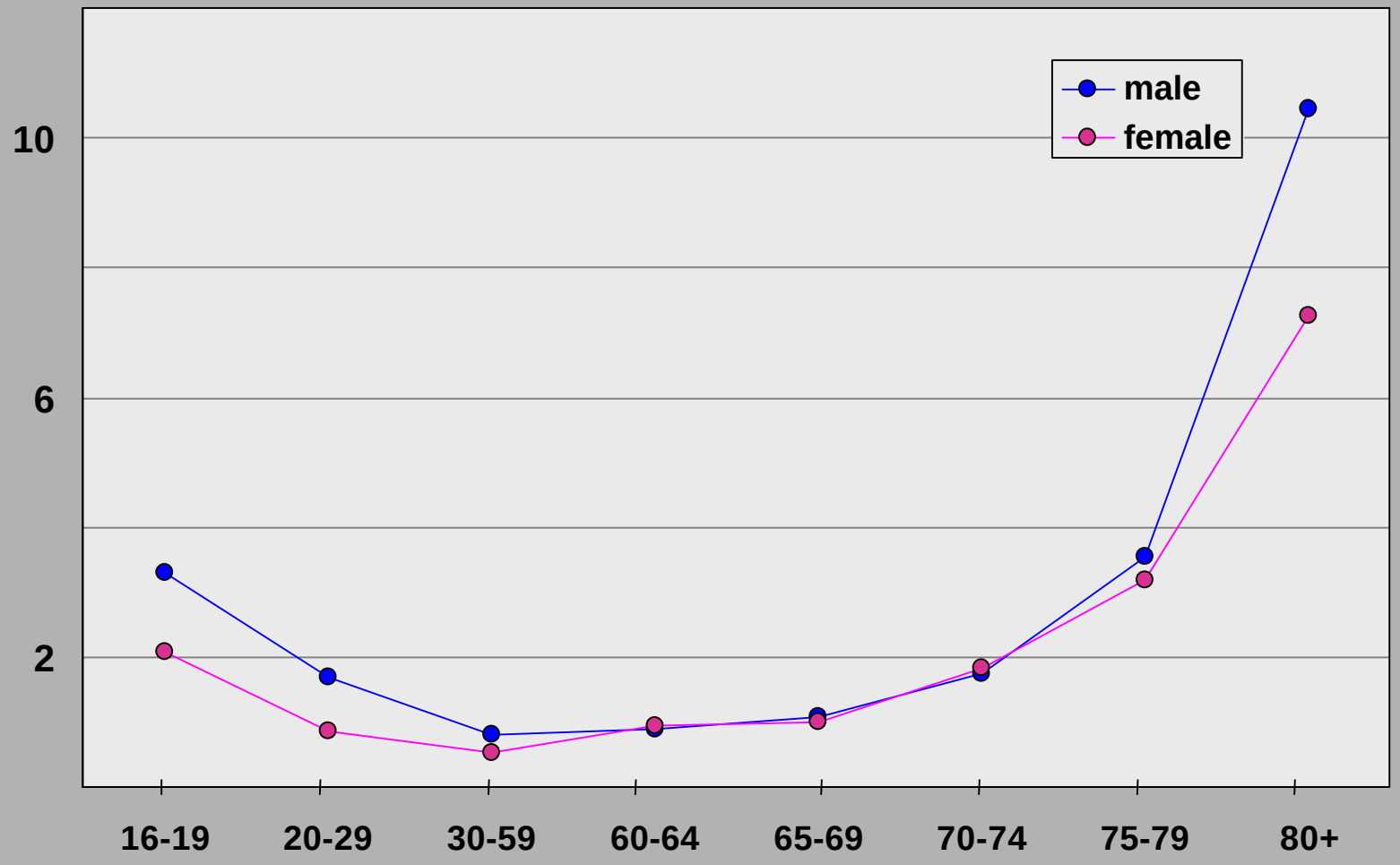
Driver deaths by age and gender, 1993-97

Per 100 million vehicle-miles



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Question: Do older drivers have elevated rates of crash involvement?

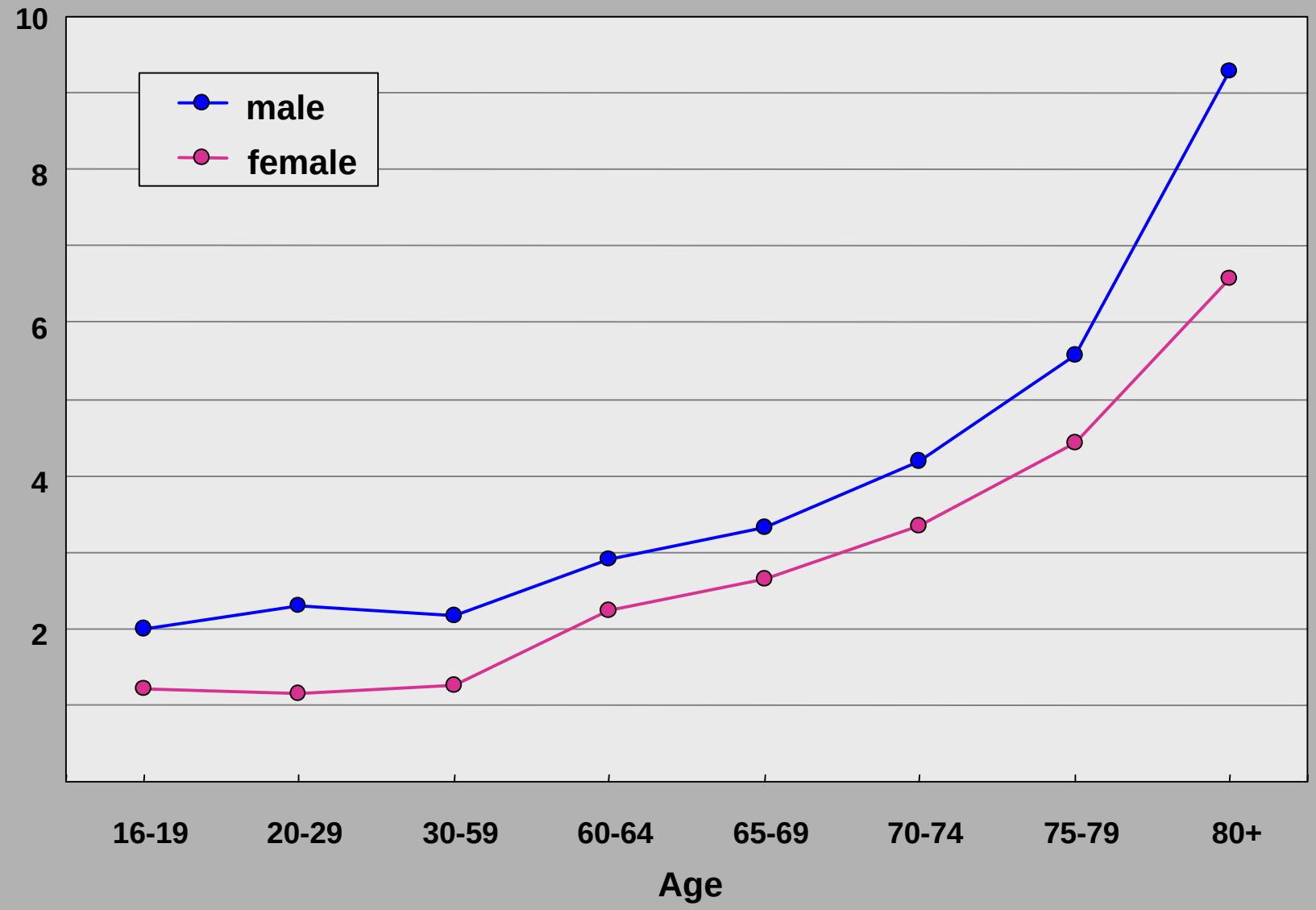
Answer:

- It depends on the denominator and whether the crash is fatal or nonfatal
- Younger drivers: much higher risk
- Fatal crashes: some increased risk of involvement per driver, marked increase per vehicle-mile
- Police-reported crashes: risk not increased per driver, marked increase per vehicle-mile

Question: Are older drivers more likely to die when they get into crashes?

Driver deaths per 1,000 crashes

By age and gender, 1993-97



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Question: Are older drivers more likely to die when they get into crashes?

Answer:

- Yes, risk increases by ages 60-64
- See steeper increase for female than male drivers at ages 60-64

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Question: Is fragility or excessive crash involvement more important in explaining deaths among older drivers?

Methods: Measures

Fragility

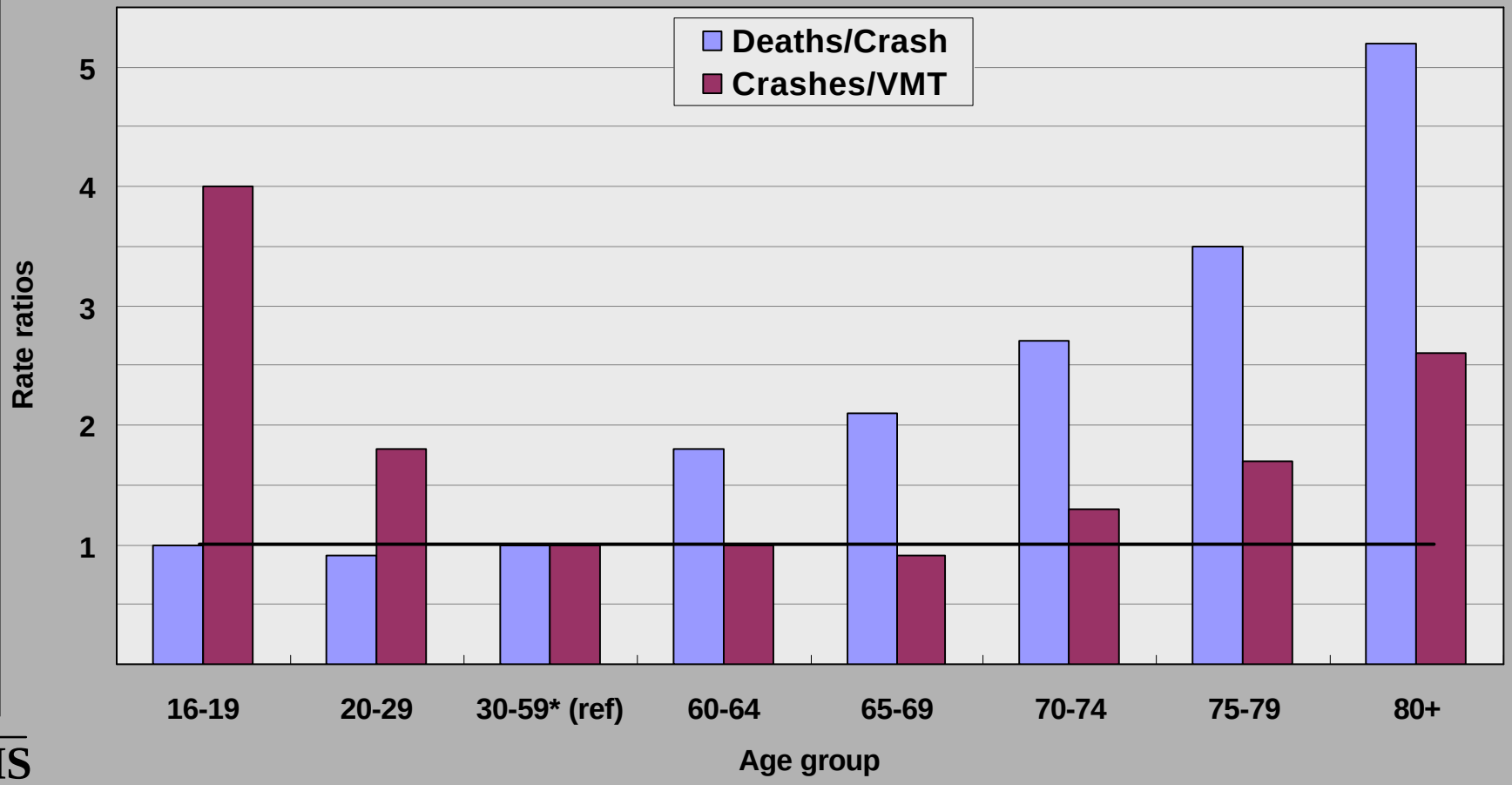
Passenger vehicle driver deaths per 1,000 drivers in police-reported crashes

Excessive crash involvement

Passenger vehicle drivers in police-reported crashes per 100 million vehicle-miles of travel (VMT).

Rate ratios for driver deaths per crash (fragility marker) and crashes per VMT (crash overinvolvement marker)

Women



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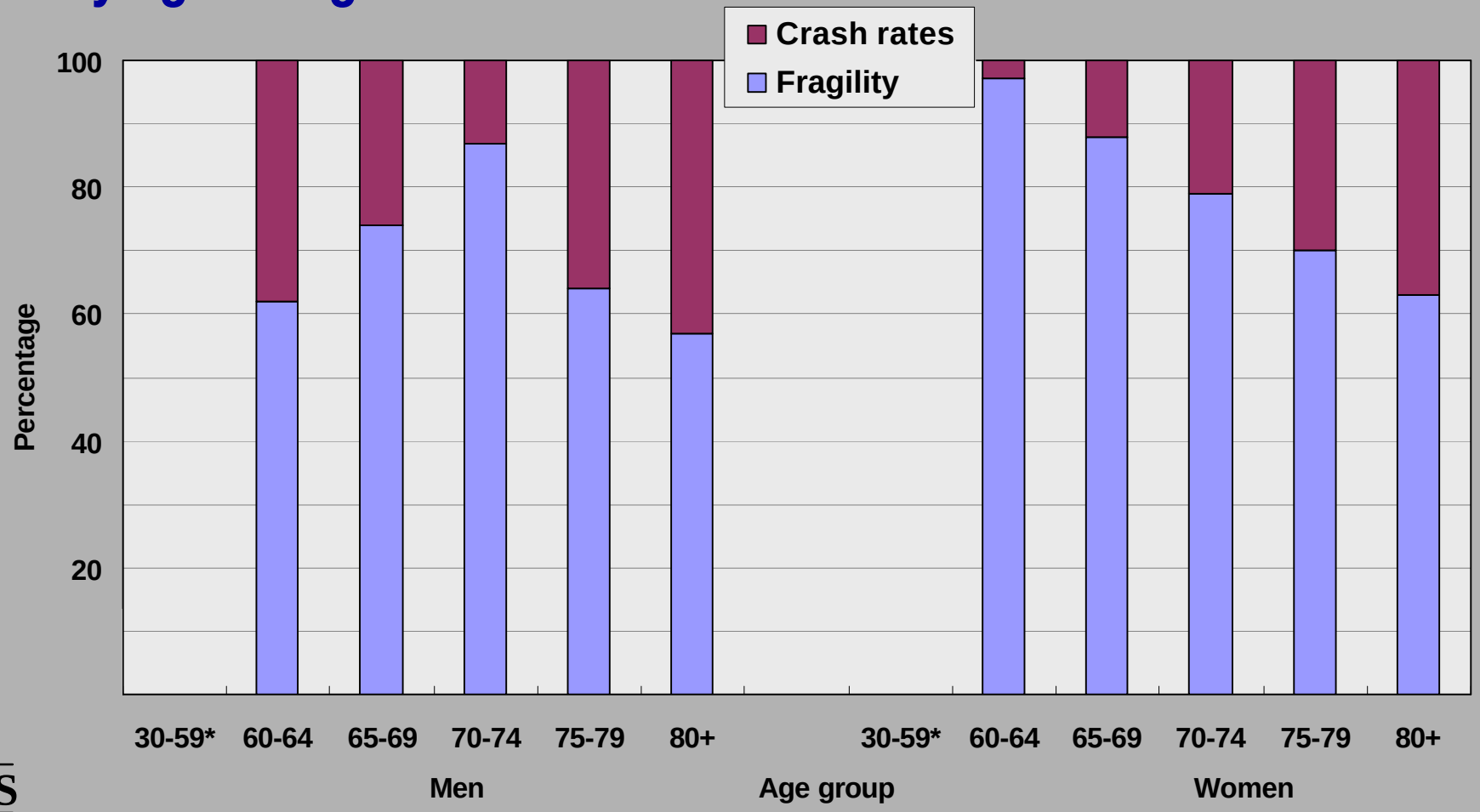
Relative contributions of fragility and crash rates to older driver deaths per VMT (reference group: ages 30-59)

By age and gender



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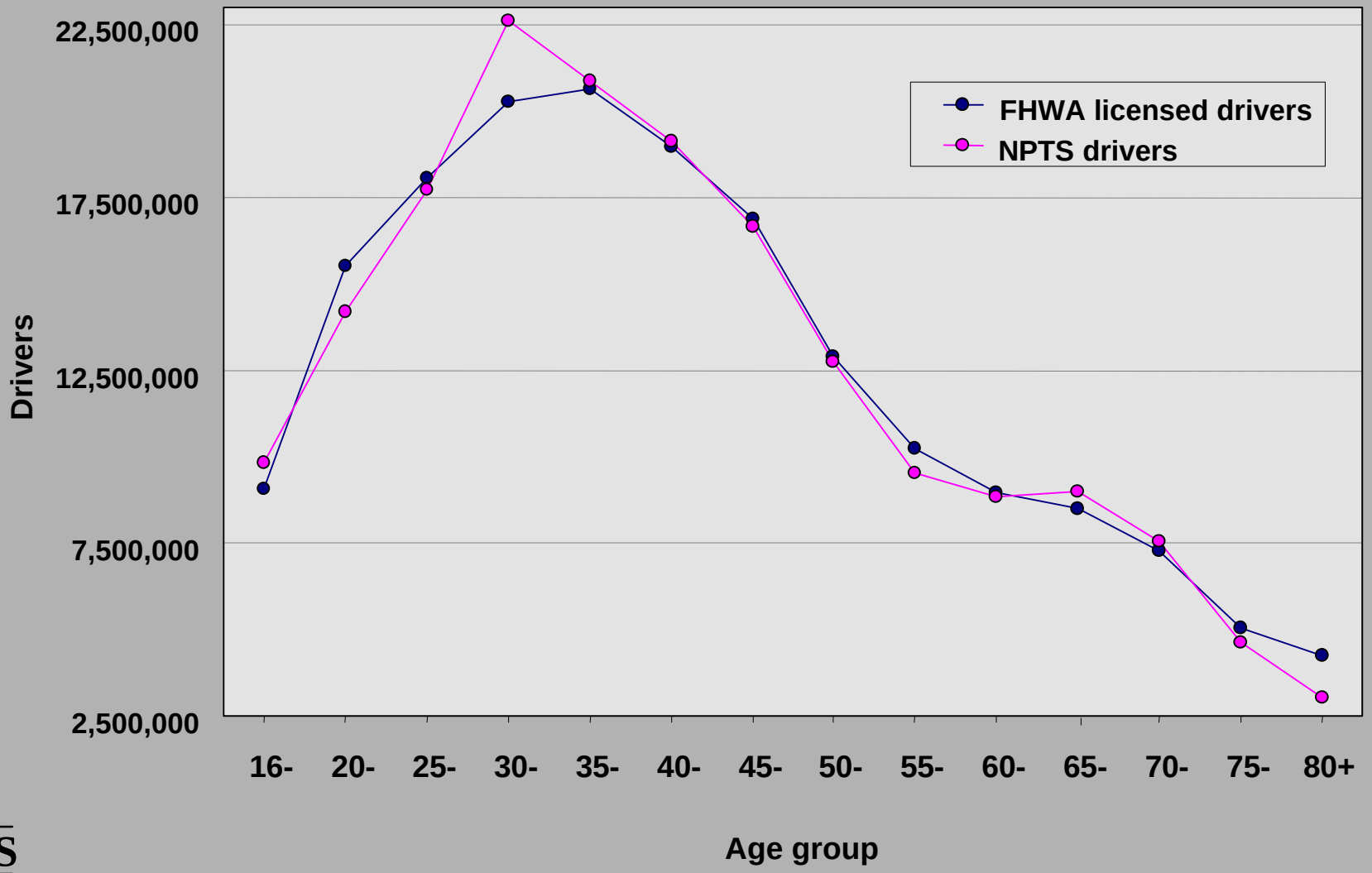
Question: Is fragility or excessive crash involvement more important in explaining elevated fatalities among older drivers?

Answer:

- Fragility is the overriding factor, even among drivers ages 80+
- Excess crash involvement starts to play a role at age 75

Question: Do older drivers pose a risk to other road users?

Comparison of estimates of drivers from standard federal statistics and 1995 NPTS



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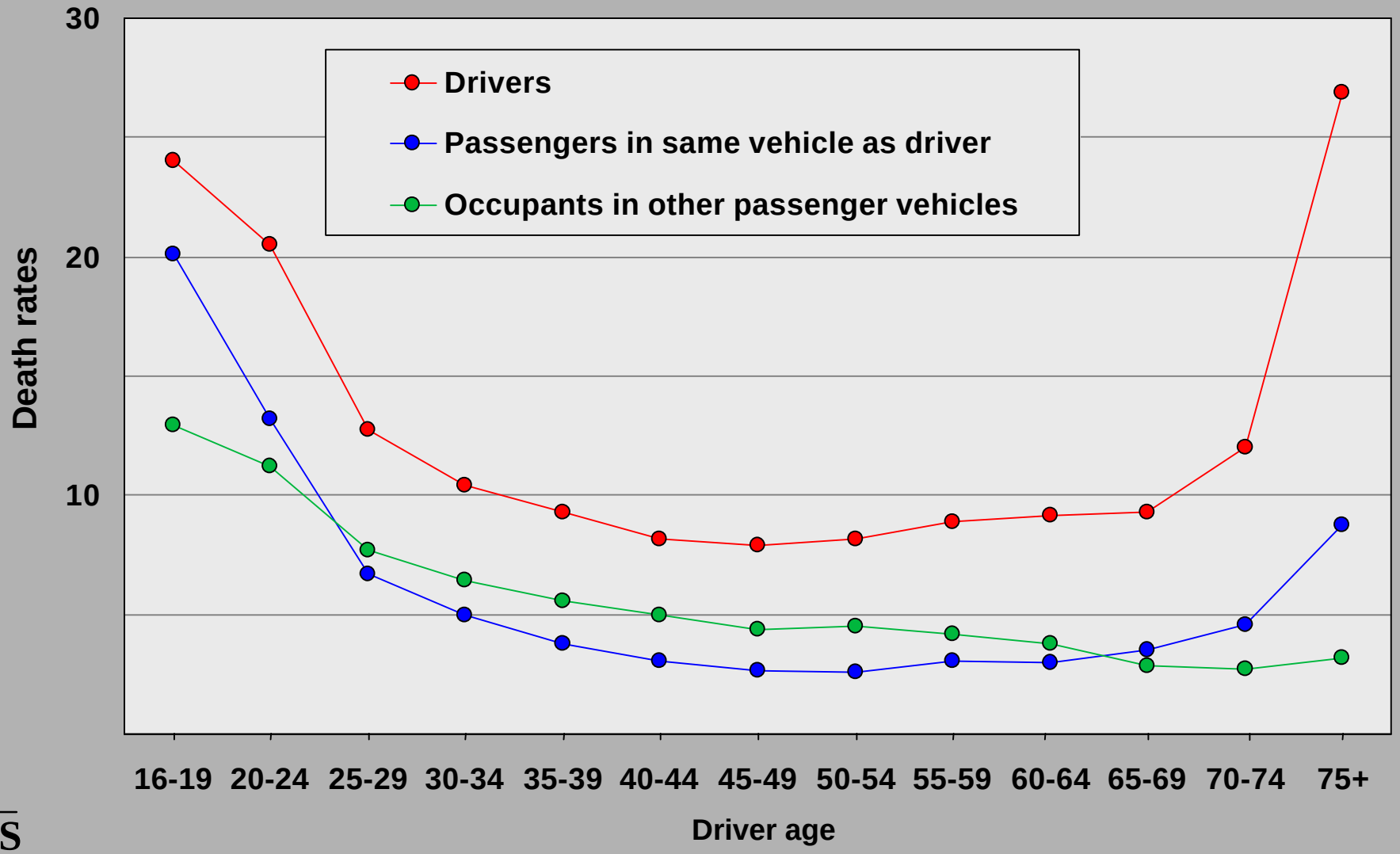
Deaths per 100,000 drivers

By driver age, 1993-97



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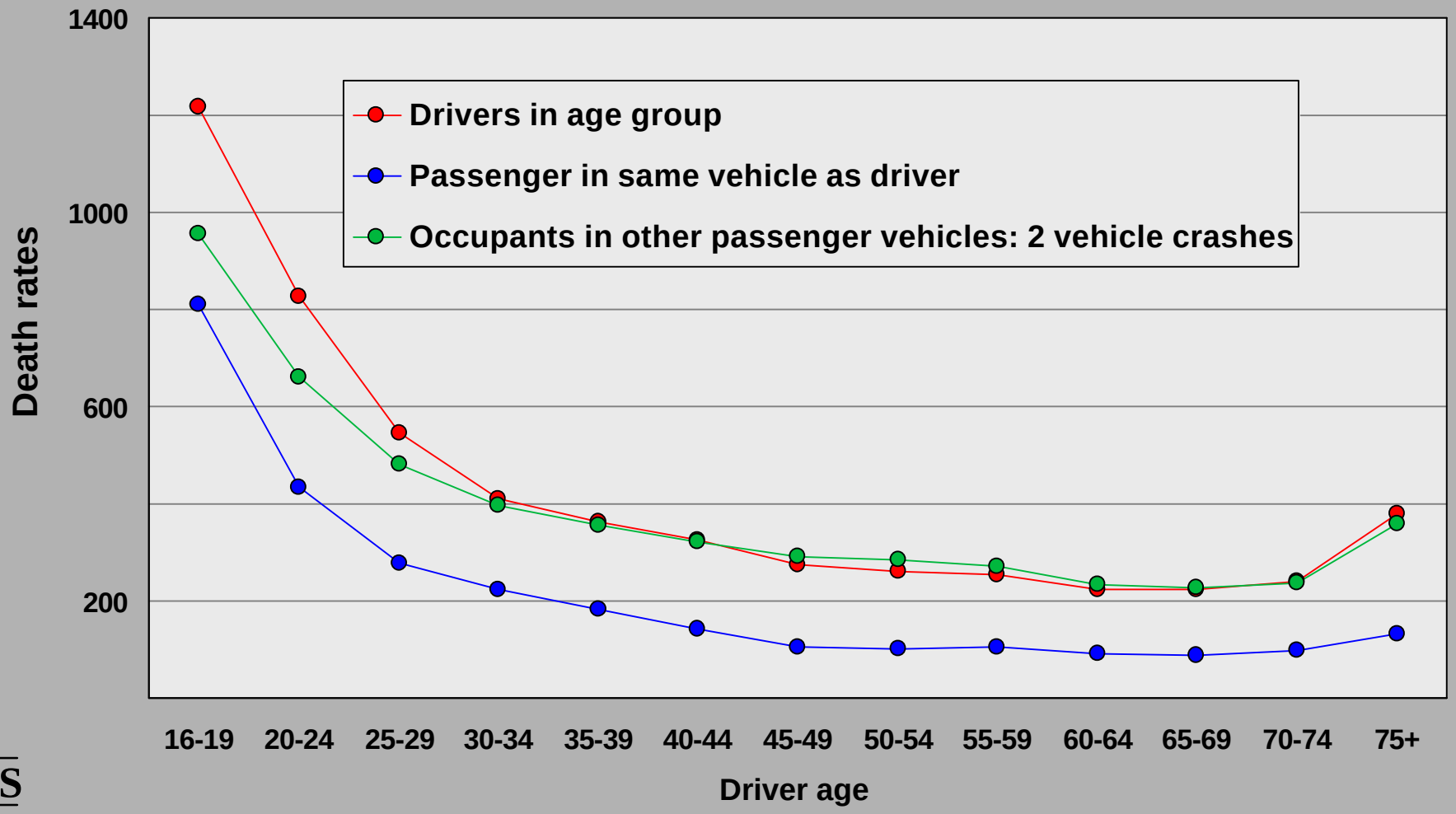
People with nonfatal injuries per 100,000 drivers by driver age and person type, 1993-97 GES and 1995 NPTS

Active drivers



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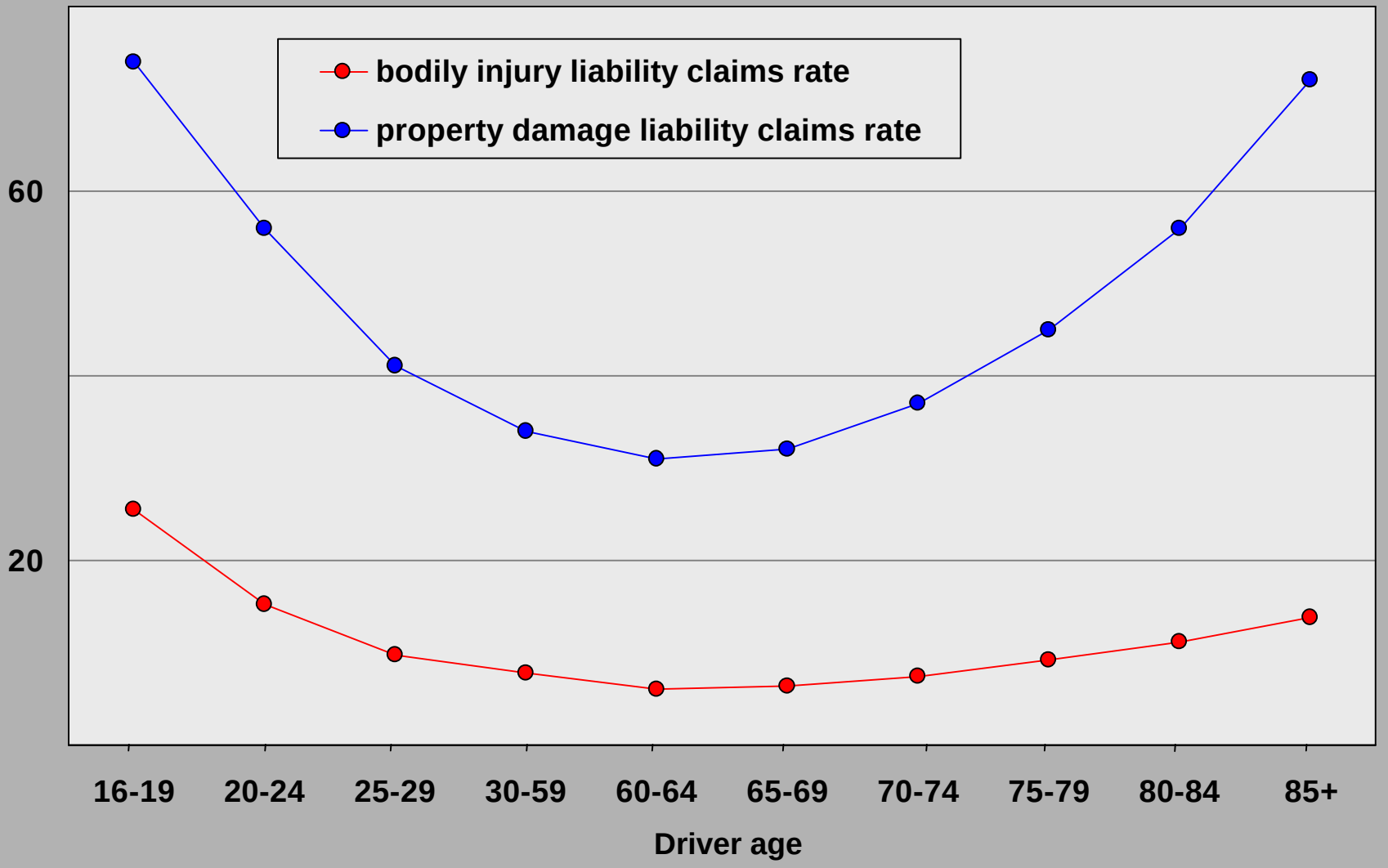
Liability claims per 1,000 insured vehicle-years

By driver age and type of claim, model years 1999-2001



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Question: Do older drivers pose a risk to other road users?

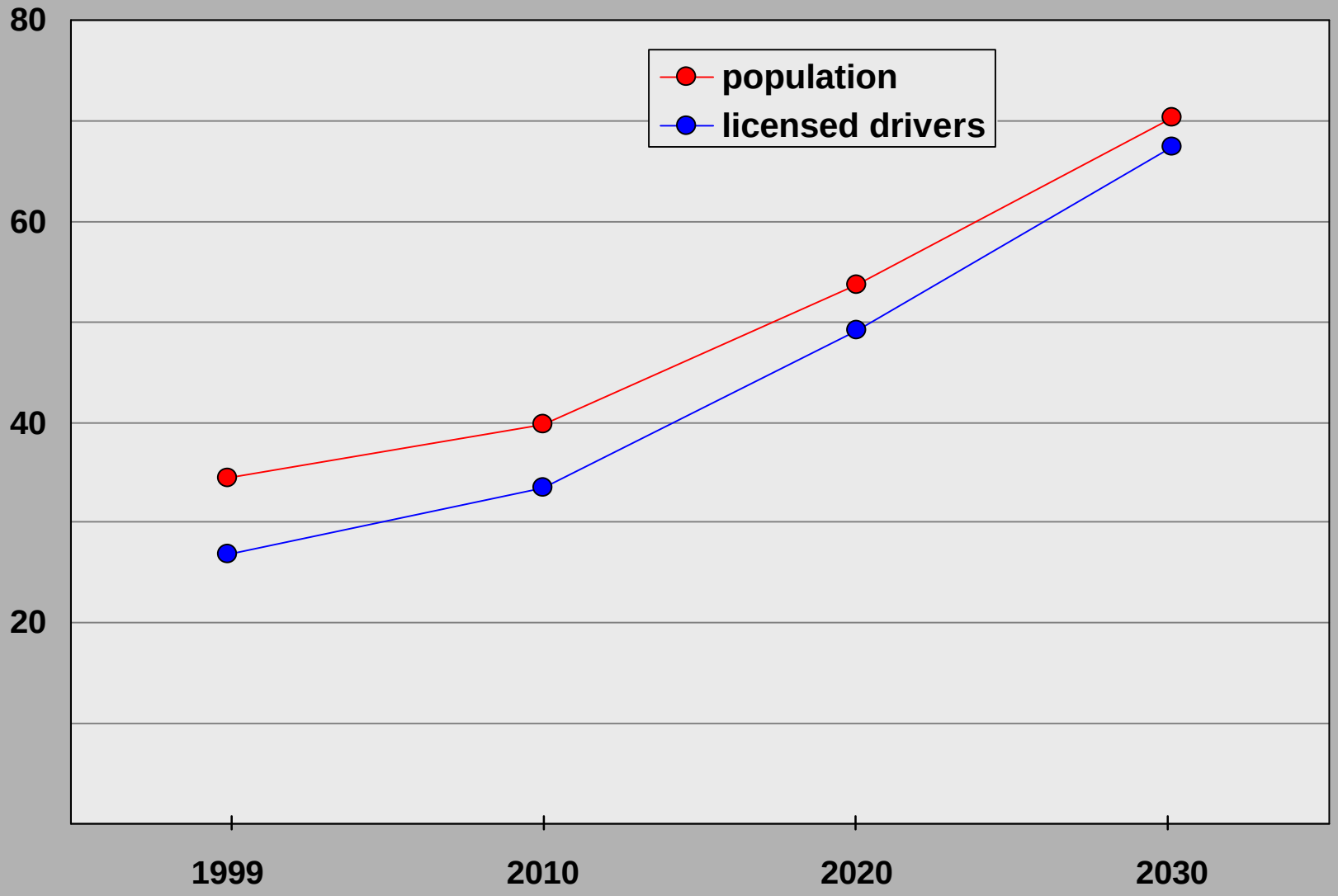
Answer:

- No, for fatal crashes, except to themselves and their passengers
- Yes, starting at ages 75+, for crashes resulting in nonfatal injuries (modest increase)
- Greatest risk to other road users is posed by young drivers

Question: What will be the effect of increasing numbers of older drivers on the roads?

Projections of population and licensure

Ages 65 and older



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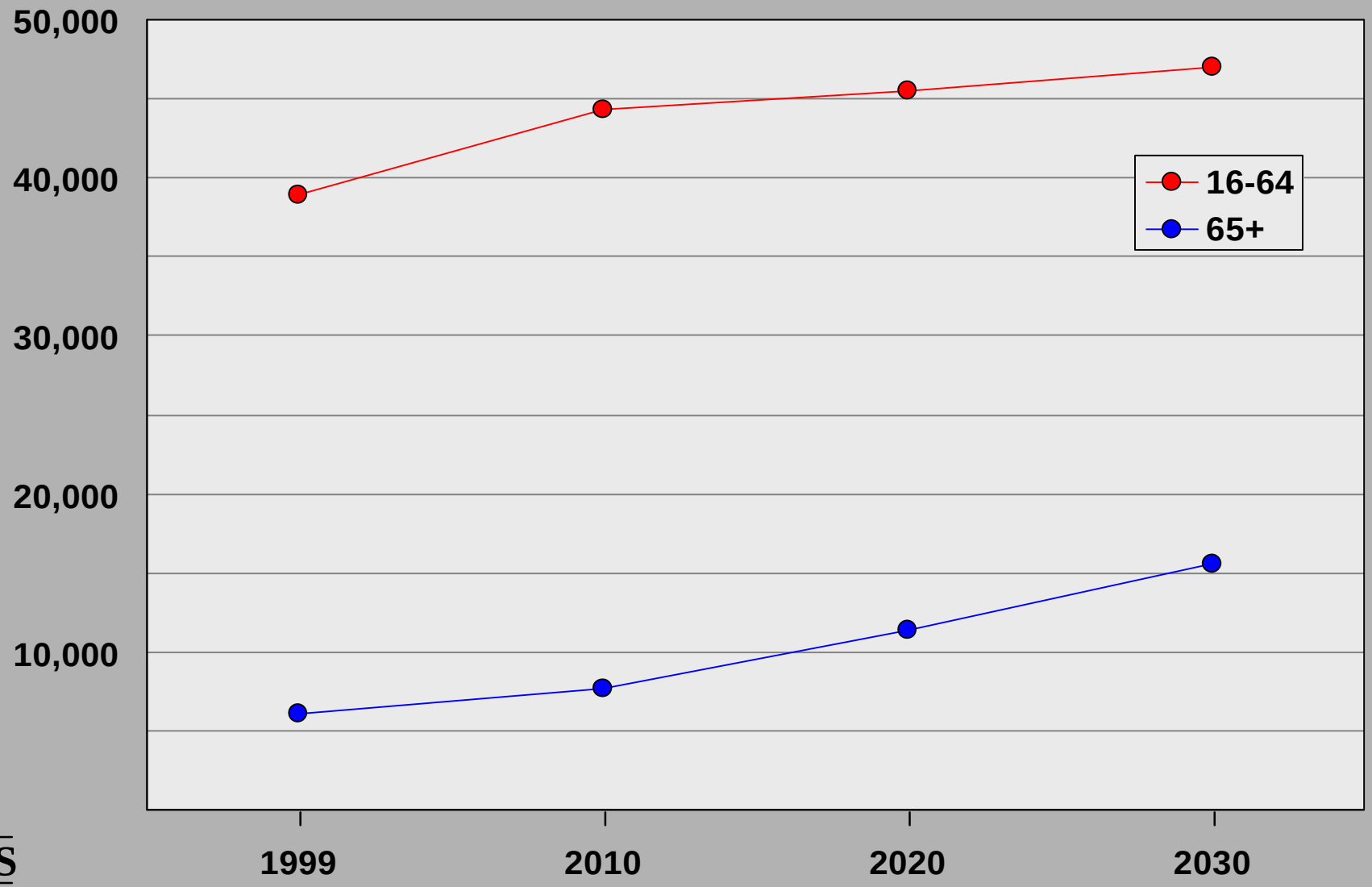
Projections of drivers involved in fatal crashes

Ages 16-64 and 65 and older



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Question: What will be the effect of increasing numbers of older drivers on the roads?

Answer:

- Percentages of drivers ages 65+ in fatal crashes will rise from 14% in 1999 to an estimated 25% in 2030.
- Percentages ages 65+ in police-reported crashes will rise from 8% in 1999 to an estimated 15% in 2030

Limitations of studies

- Unable to control for other factors (travel patterns, speed, belt use, vehicle size, alcohol) affecting death rates.
- Sampling variation in General Estimates System and Nationwide Personal Transportation Survey.

Countermeasures to address older driver crash involvement

Licensing restrictions and screening methods

- Requiring older drivers to renew their licenses at shorter intervals might discourage some
- Screening methods to accurately identify at-risk drivers have not been perfected
- Screening methods to provide guidance to older drivers, their families, and physicians should be evaluated

Design changes that might help older vehicle occupants

- Belt force limiters
- Improved safety belt systems
  - 4 point belts
  - Inflatable belts
- Advanced airbag technology
  - Advanced frontal airbags
  - Side impact airbags
- Vehicle ergonomics
  - Easier access, higher contrast displays, larger controls

References

- Lyman, Ferguson, Braver, and Williams (2002). Older driver involvements in police-reported crashes and fatal crashes: trends and projections. *Injury Prevention* 8:116-120.
- Li, Braver, Chen (2003). Fragility versus excessive crash involvement as determinants of high death rates per vehicle-miles of travel among older drivers. *Accident Analysis and Prevention* 35:227-235.
- Braver and Trempel (2003). Are older drivers at higher risk of involvement in collisions resulting in deaths or nonfatal injuries among their passengers and other road users? Submitted for publication.

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